ABSTRACT

A method of controlling the evaporation of liquid in samples in an evaporating centrifuge, by monitoring the centrifugal force exerted on a sample holder containing a liquid sample having solid material dissolved or otherwise mixed therein. The centrifugal force is determined using a load cell (19), a strain gauge or, where relative movement between sample holder (4) and rotor (54) is permitted albeit with resilient restraining means, the centrifugal force signal may be generated by a position sensing transducer. The speed of rotation is sensed by a further transducer and both force and speed signals are conveyed to a computing means (54) programmed to generate a process control signal for controlling the evaporation process therefrom. A preferred method of control involves determining the rate of change of weight with time and terminating the evaporation process when the rate of change drops to zero. Evaporation is assisted by heating the samples and the process control signals determine not only the speed of rotation, but also the heating of the samples. A weight signal can be computed from the force signal by reference to the speed signal which is proportional to the centrifugal force acting on the sample holder and therefore the sample. A signal indicative of the weight of the sample itself can be computed by deducting from the combined weight of the holder and sample, a signal representing the weight of the sample holder itself. Different liquids evaporate at different rates and imbalance can occur as between different samples located around a rotor. Imbalance forces caused by differential evaporation rates may be reduced by means of a raceway (22) mounted on the rotor, or spindle driving rotor, which is incompletely filled with ball bearings (24) which in rotation distribute themselves around the raceway to counteract the imbalance forces.